

Agricultural Science and Careers:

An Interactive Curriculum for Youth Educators

Slides and Worksheets



MISSISSIPPI STATE
UNIVERSITY™

EXTENSION

Appendix B: Slides and Worksheets

This curriculum and accompanying materials can be downloaded at <https://msuext.ms/p4066>.

Slides from an Instructional Presentation to Use with Module 1



The header slide features a green background with the word "Agriculture" in white. To the left is a small image of a blue sky with white clouds. To the right is a small image of a green seedling growing out of brown soil. In the top right corner is the Mississippi State University Extension logo, which includes a red "M" with "STATE" inside, and the text "MISSISSIPPI STATE UNIVERSITY" and "EXTENSION" below it.

Introduction

- What is agriculture?
- What products do we get from agriculture?
- Is agriculture important to your everyday life? Why or why not?



A close-up photograph of a wheat field with golden wheat stalks under a clear blue sky.

What is Agriculture?



A collage of six images related to agriculture: two sheep, a field of corn, a green tractor, a pile of potatoes, and a black and white cow.

It is the science of growing plants and rearing animals. It includes:

Processing them into various forms to provide food, fuel, fiber, and other products for use.

Agriculture involves the care and management of natural resources such as soil, water, air, forests, and wildlife.

Slides from an Instructional Presentation to Use with Module 2

Plants and Animals

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Introduction

- How and why are plants and animals used in society?
- How are plants and animals turned into food or other products for humans?
- Do plants and animal products play a role in human health and medicine? If so, how?

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Game

Match the following plants and animals with their appropriate products

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Plant Cards



1.



5.



2.



6.



3.



7.



4.



8.



A. Peanut butter



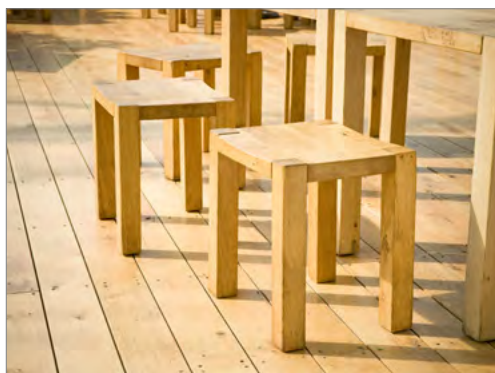
E. Pasta



B. Ethanol fuel



F. Veggie patties



C. Furniture



G. Sugar



D. Jeans



H. Tires

Animal Cards



1.



5.



2.



6.



3.



7.



4.



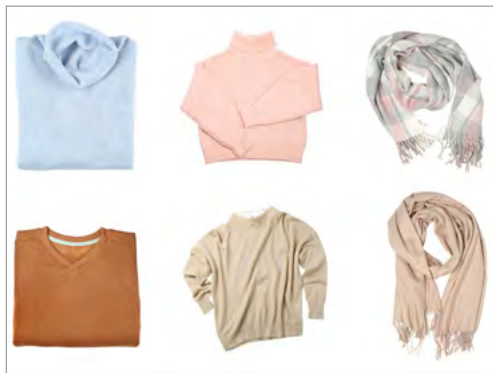
8.



A. Ice cream



E. Leather



B. Cashmere



F. Flu vaccines



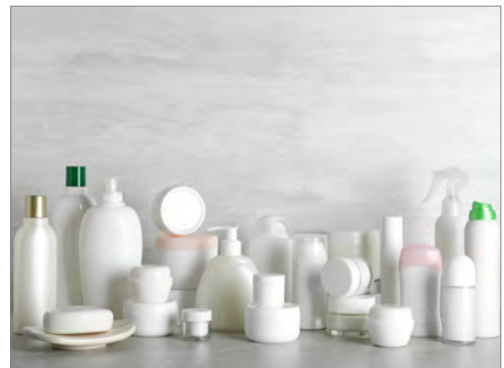
C. Blood thinners



G. Silk



D. Roasted turkey



H. Body care products

Worksheet: Match the Product with the Plant

Product	Plant Source for the Product
A. Peanut butter	
B. Ethanol fuel	
C. Furniture	
D. Jeans	
E. Pasta	
F. Veggie patties	
G. Sugar	
H. Tires	

Worksheet: Match the Product with the Animal**Product****Animal Source for the Product****A. Ice cream****B. Cashmere****C. Blood thinners****D. Roasted turkey****E. Leather****F. Flu vaccines****G. Silk****H. Body care
products**

Worksheet Answer Key: Match the Product with the Plant

Product	Plant Source for the Product
A. Peanut butter	<i>(Peanut)</i> 3
B. Ethanol fuel	<i>(Corn)</i> 5
C. Furniture	<i>(Pine tree)</i> 7
D. Jeans	<i>(Cotton)</i> 1
E. Pasta	<i>(Wheat)</i> 8
F. Veggie patties	<i>(Soybean)</i> 2
G. Sugar	<i>(Sugarcane)</i> 6
H. Tires	<i>(Rubber Tree)</i> 4

Worksheet Answer Key: Match the Product with the Animal

Product	Animal Source for the Product
A. Ice cream	<i>(Dairy cows)</i> 7
B. Cashmere	<i>(Goats)</i> 8
C. Blood thinners	<i>(Pigs)</i> 3
D. Roasted turkey	<i>(Turkeys)</i> 6
E. Leather	<i>(Cattle)</i> 2
F. Flu vaccines	<i>(Chickens)</i> 1
G. Silk	<i>(Silkworms)</i> 5
H. Body care products	<i>(Sheep)</i> 4

Slides from an Instructional Presentation to Use with Module 3



Introduction

What is soil?

What makes a soil suitable for plants?

What does the soil provide for plants?

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What is Soil?

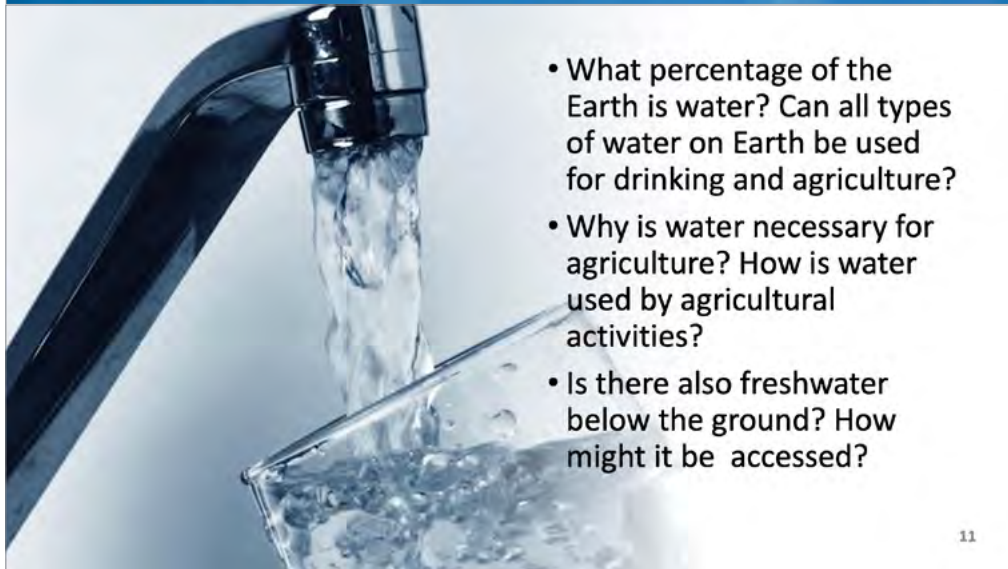
It is the surface mineral and/or organic layer of the earth that has been partially broken down by environmental processes. In agriculture, soil refers to the "dirt" in which plants grow.



Slides from an Instructional Presentation to Use with Module 4



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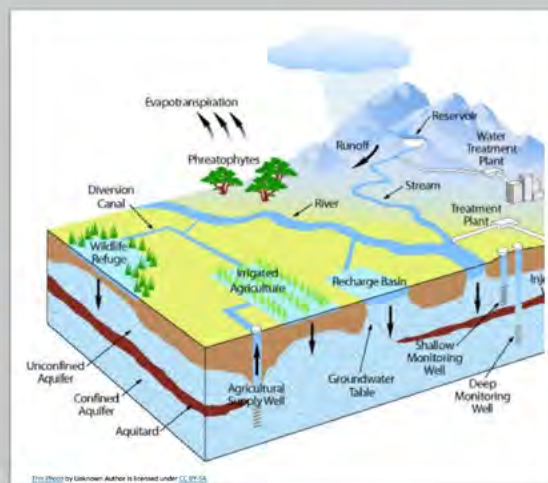
- What percentage of the Earth is water? Can all types of water on Earth be used for drinking and agriculture?
- Why is water necessary for agriculture? How is water used by agricultural activities?
- Is there also freshwater below the ground? How might it be accessed?

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What is an Aquifer?

An underground layer of sand, gravel, or rock whose many holes contain a usable supply of groundwater.

They are accessed by drilling and operating wells that supply water for irrigation, homes, power plants, and factories.



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Slides from an Instructional Presentation to Use with Module 4 (Cont.)

Building an Aquifer

STEP 1



STEP 2



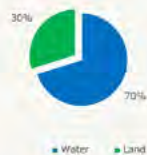
STEP 3



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Why Should We Conserve Water?

Earth



Earth's Water



Fresh Water (3%)

- Available water - 0.5%
- Unavailable water - 2.5%
 - Ice caps, glaciers - 68%
 - Ground water - 30%

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How We Conserve Water in Agriculture

- Raise plants and animals that require less water.
- Decrease evaporation by covering the soil with mulch.
- Build water harvesting/reuse systems and improve irrigation management.
- Store and apply farm chemicals and animal wastes carefully to avoid polluting groundwater and surface water.

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Slides from an Instructional Presentation to Use with Module 5



Food

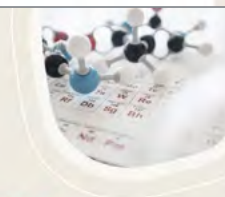
Introduction

- Is science involved in producing and cooking food? If so, how?
- What are microorganisms? Are microorganisms used or found in food? Are they good? Are they bad?
- What makes foods like bread and pancakes rise and become fluffy?



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Activity



STEP 1



STEP 2



STEP 3



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Slides from an Instructional Presentation to Use with Module 5 (Cont.)



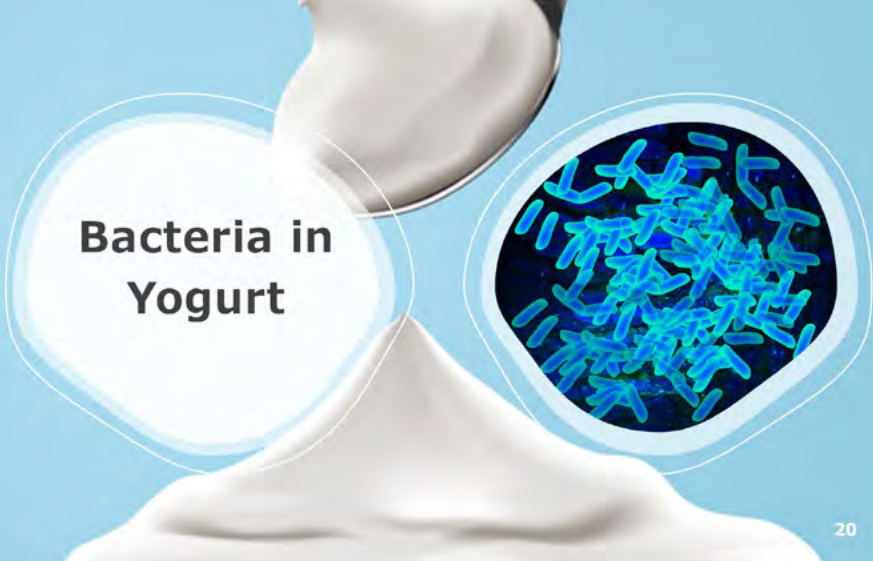
Microorganisms

- Yeast
 - Bread
 - Beer



Yeast fungus under a microscope.

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Bacteria in Yogurt

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Bacteria for Cheese Production

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Slides from an Instructional Presentation to Use with Module 6

CAREERS IN AGRICULTURE



INTRODUCTION

- What agricultural careers have you seen, or do you know about?
- What type of degree do you need to have an agricultural career?
- Do you think agricultural jobs are related to STEM/ includes STEM fields?



Slides from an Instructional Presentation to Use with Module 6 (Cont.)

CAREER PATHWAYS



Agribusiness



Agricultural Education



Animal Systems



Biotechnological
Systems

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CAREER PATHWAYS



Environmental and
Natural Resource
Systems



Food Products and
Processing Systems



Plant Systems



Engineering Systems

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Correct!

- Summarize for this career:
 - What does it do?
 - How does it help in this situation?
 - What degree does it need?

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ACTIVITY ANSWERS

A

- Dietitian
- Sensory Scientist
- Packaging Designer
- Processing Technician
- Agricultural Marketer
- Food Safety Specialist
- Product Development
- Procurement/Merchandising Agent

B

- Accountant
- Data Analyst
- Loan Officer
- Aquaculturist
- Agricultural Insurance Adjuster

C

- Welder
- Mechanic
- Machinist
- Electrician
- Information Technology (IT) Programmer/Developer
- Agricultural Engineer

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ACTIVITY ANSWERS

D

- Crop Adviser
- Extension Agent
- Agricultural Pilot
- Agricultural Researcher
- Agricultural Input Salesperson

E

- Forester
- Geologist
- Hydrologist
- Veterinarian
- Wildlife Biologist/Ecologist
- Agricultural Journalist
- Agrotourism Educator
- Environmental Technician

F

- Landscape Architect
- Landscape Technician
- Greenhouse Manager
- Agricultural Instructor

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AFTER HIGH SCHOOL



College

Associate Degree/
Certifications

6 Months–2 Years



University

Bachelor's
Degree

4 Years



University

Graduate Degree –
Master's/PhD

1–6 Years

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RESOURCES

- Speak to your Counselors and Teachers
- Explore Courses at Career and Technical Center
- Research
 - College Websites
 - <https://agexplorer.ffa.org/>

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Career Card Questions

For each situation, which careers may be involved and how might they?

A. Your company is trying to create and sell a new chocolate bar.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____

B. Your catfish farm is trying to expand and make money after a natural disaster.

1. _____
2. _____
3. _____
4. _____
5. _____

C. Your company invents, manufactures, and repairs agricultural robots.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

D. Your cotton crop is looking unhealthy and growing poorly.

1. _____
2. _____
3. _____
4. _____
5. _____

E. You are in charge of creating a new national park and increasing its number of visitors.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____

F. You are the principal of a high school, and you want to start a beautiful school garden full of herbs, vegetables, and ornamental flowers.

1. _____
2. _____
3. _____
4. _____

Career Card Answer Key

For each situation, which careers may be involved, and how might they help?

A. Your company is trying to create and sell a new chocolate bar.

- Product Development Technologist
- Sensory Scientist
- Food Processing Technician
- Food Safety Specialist
- Packaging Designer
- Marketer
- Procurement/Merchandising Agent
- Dietitian

B. Your catfish farm wants to expand and make money after a natural disaster.

- Accountant
- Agricultural Loan Officer
- Agricultural Insurance Adjuster
- Data Analyst
- Aquaculturist

C. Your company invents, manufactures, and repairs agricultural robots.

- Agricultural Engineer
- Mechanic
- Machinist
- Welder
- Electrician
- Information Technology (IT) Programmer/Developer

D. Your cotton crop is looking unhealthy and growing poorly.

- Agricultural Pilot
- Agricultural Researcher
- Cooperative Extension Agent
- Crop Adviser
- Agricultural Input Salesperson

E. You are in charge of creating a new national park and maximizing its number of visitors.

- Hydrologist
- Geologist
- Wildlife Biologist/Ecologist
- Veterinarian
- Forester
- Environmental Technician
- Agritourism Educator
- Agricultural Journalist

F. You are the principal of a high school, and you want to start a beautiful school garden full of herbs, vegetables, and ornamental flowers.

- Agricultural Instructor
- Landscape Architect
- Greenhouse Manager
- Landscape Technician